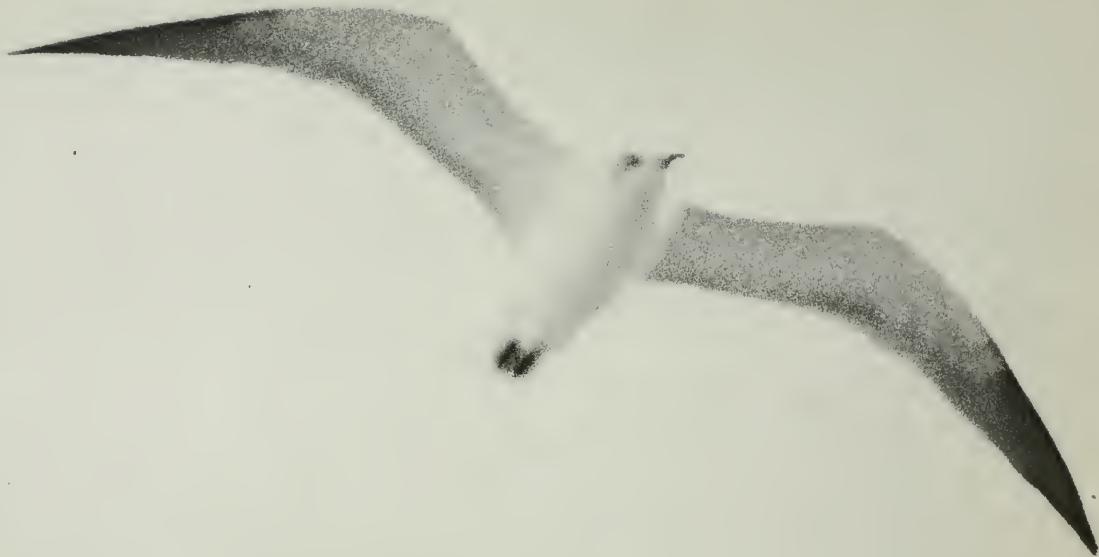




Architecture at Rice 22



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Architecture and Psychology: Beyond the Honeymoon

"Architecture and Psychology: Beyond the Honeymoon" by Edwin P. Willems, Ph.D., Rice University Department of Psychology, was the concluding presentation in the spring 1967 lecture series of the School of Architecture. The lecture series brings students, faculty, members of the profession, and the interested public together each week during the school year to hear speakers explore elements which comprise the Rice Triad concept of education in architecture . . . presenting to the student a balance of information contributing to excellence in design, technology, and management. Dr. Willems' lecture appears in this volume with photographs by Frederick C. Gardner, an instructor of architecture at Rice. Professor Robert Sobel was graphic designer.

— *The Editor*

Houston, Texas
December, 1967.

Architecture at Rice

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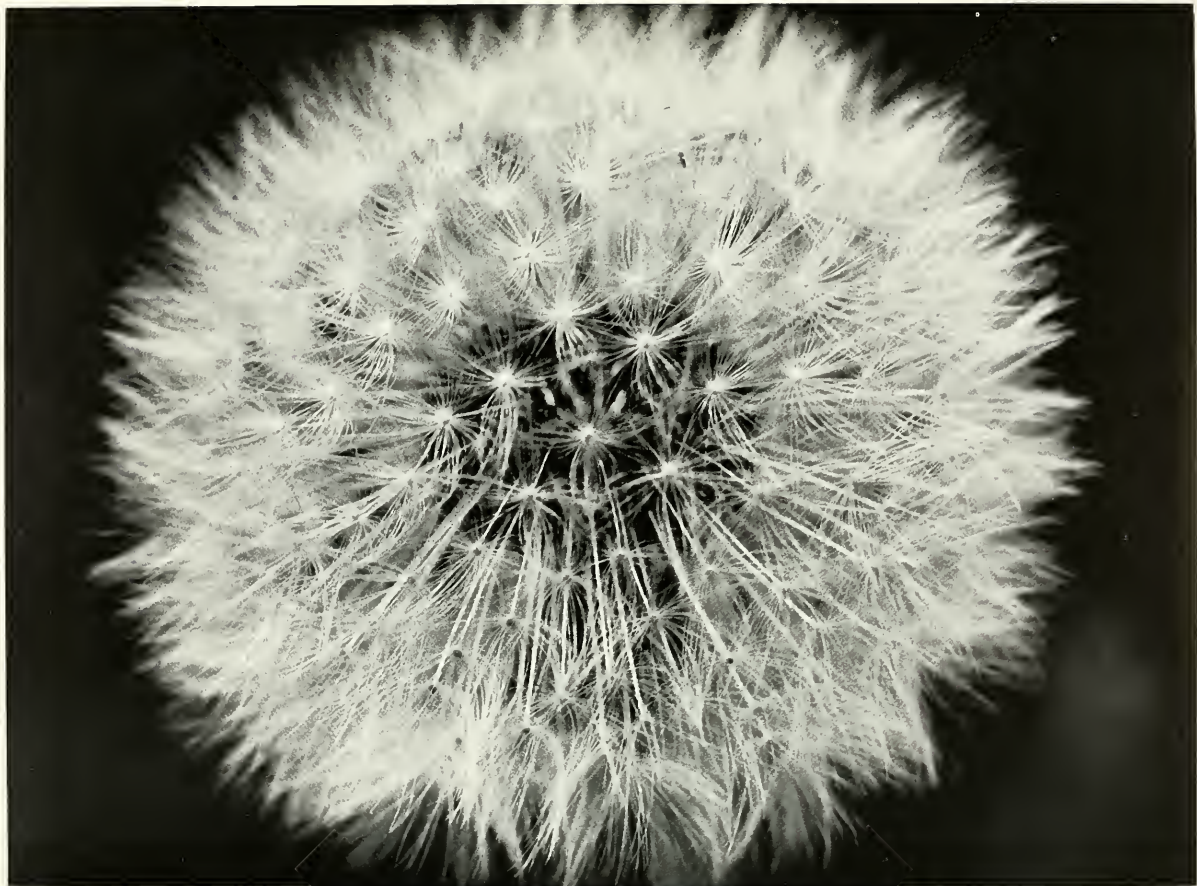
As is common when I sound off about matters that are strange and new to me, the mantle of the interloper and intruder rests heavy on my shoulders; so if I perchance violate your sensitivities, or stick my foot in my mouth in this wonderland of architecture, please be longsuffering with me, and resist the temptation to kick me out of your circle.

I think it would be only fair for me to begin by laying bare the level of my architectural sophistication, which can perhaps best be described as uninformed, naive, and old-fashioned. One way to give it the lie is to ask a question that has plagued me: Why can't we have at least one hideous house to relieve the consistent architectural good taste of the suburb? Why can't we have useless space and ornamentation? I recognize that Huxtable has said that "architecture is properly the expression of structural techniques" (Parr, 1965, p. 72), and that Wright has ruled that "all ornament, if not developed within the nature of architecture and as an organic part of such expression, vitiates the whole fabric, no matter how clever or beautiful it may be as something in itself" (p. 72). And yet, I join A. E. Parr in wondering how the fixtures, risers, and traps of bathrooms express the structural truth of architecture. In other words, applied plumbing for our bodily comforts is splendid, while applied ornamentation to ease the hunger of our minds is "treason to modern architecture" (p. 72). I shall have more to say about architectural variation and ornamentation later.

¹Invited address presented to the School of Architecture, Rice University, Houston, Texas, April 24, 1967. Many of the ideas and much of the material presented belong to others. References in the body text often indicate passages that have been excerpted, adapted, and paraphrased from other sources. The sources used most frequently in this way are A. E. Parr and E. T. Hall. Where there has been loss or change in the process of adapting and paraphrasing the ideas for present use, the fault is mine.

Originally, I contemplated speaking on "An Inventory of Our Ignorance," but that speech would have been too long. I then thought of talking on "An Inventory of What We Know," but that would have been too short. So instead, I will discuss a very limited set of problems and issues we should be thinking about, under the title, "Architecture and Psychology: Beyond the Honeymoon." In the process, I hope I will be able to show that the "honeymoon" symbolism has value beyond the level of a mere catchword.

Most of you know as well as I the process that begins with acquaintance, runs through marriage, and extends beyond the honeymoon. At a certain developmental stage, boys and girls simply belong together, and when that discovery is made by a particular pair, a wonderful, tumultuous, idyllic period of courtship begins. Each about the other, remarkable and delightful discoveries are made, and the prevailing question becomes, "Where have you been all my life?" For architecture and psychology, the period of courtship and mutual, idyllic discovery began some time ago, and there was a spirit of enthusiastic billing and cooing about "Where have you been all my life?" and "We were made for each other." After all, architecture is a set of interests whose central function is to intervene in man's behalf by designing and creating environments for productive and enjoyable living; and psychology is a set of interests whose central function is to discover and document the whys and wherefores of human living and behavior, and which has as one of its crucial aims the debugging of the human enterprise to make it more enjoyable and productive. One can scarcely think of two more ideally compatible partners than a discipline that works at optimizing man's environment and one that seeks to understand what such optimizing would comprise.



So, here we are in the honeymoon. We all have at least some daydreams about how blissful honeymoons can be. Think of it, just architecture and psychology! We're married, and a long future of shaping and enriching human life lies ahead of us. Together! However, it is also fairly common to find the honeymoon a period during which, under close confinement, contact, and surveillance, unexpected sensitivities, unpleasant habits, and disruptive commitments rear their meddlesome heads. If you don't believe it, just ask some of my architect friends how disappointing it has been for them to ask me or one of my colleagues what appeared to be a simple question about human behavior or human nature relevant to an architectural problem and get back a stutter, a bit of jargon, or worse yet, an evasion or a vacant stare. Or, imagine my disappointment at finding out that architects, those artisans of the environment, could not articulate the environment in a way that I found either understandable or researchable. To do research on the environment, I have to see it, and be able to measure it, and not just feel it in my gut, or cerebrum, or soul, or from wherever architectural genius emanates.

Inexorably, therefore, the two courtship partners wove, hand-in-hand, down the path of discovery and courtship to the marriage ceremony. For good measure, there was not one, but at least two, actual marriage ceremonies. One lasted a whole year, under the title of "Psychology and the Form of the Environment," held at MIT during 1965 and 1966. The second was shorter, but no less binding, a National Conference on Architectural Psychology, held in Utah in May of 1966. I can attest to the occurrence of the second, because I was there, and although some grouchy fathers-in-law and jealous lovers complained about the union, it was consummated in classic, flavorful style.

"Without minimizing the importance of the other senses, I think we may say with some confidence that man's relationship to his architectural environment is overwhelmingly dominated by what he sees, and that the dreams that take shape on the architect's drawing table are dreams of visual imagery—not designs of odors and sounds."

Assuming that the courtship transcended puppy love, that the marriage was a good one, will one or both of the partners now, at the end of the honeymoon, retreat to their mother disciplines, heartsick, angry, disappointed, unfulfilled, and crying, "He doesn't understand me, and he doesn't want to understand me." I hope not, and think not, but we will have to realize that the honeymoon is over, and that it is time to get down to the business of making the marriage work. I am convinced it can be a workable marriage, and more important, a productive one. However, making it work will require that we bring the problems and issues out into the open and deal with them.

With the analogical stage set, let me try to state what I consider to be the *master problem*, or major order of business, of architecture in union with psychology. It would seem logical to expect that there is a great fund of knowledge at hand concerning the relations between the architectural environment and emotions and behavior. However, in this expectation we are sadly disappointed. We all know there are such relationships, and many persons have tried to say what the field of architectural psychology looks like, but always as seen across the fences of their parent disciplines or through the eyes of plain intuition. Like all artists, the architect must realize *in advance* the main needs of his clientele, sometimes even before the clientele is aware of the needs (Parr, 1965, p. 79); and it is very embarrassing that psychologists can tell the architect so little at present. On the other hand, we can no longer leave it to the architect to divine our needs from out of an artistic trance. There are better ways of discovering what our needs are, and this search lies in the field of psychology. Its success can only be ensured by using the rigorous methods of scientific inquiry to determine the needs, which architectural artistry may then be able to meet (p. 80). As I see it, then, the *master problem* of architectural psychology is the establishment of



a field, under that label, that is truly joint and interdependent. No one has really yet made that field his own, although we should see the first Ph.D.s in architectural psychology soon.

Against this background, and without trying too hard to separate fact from my speculations, I will try to engage in two rounds of discussion, neither of which will I have the time to treat exhaustively. The first round will deal with several areas that exemplify rather clearly some possible cross-seedings between architecture and psychology. The second round will deal with a limited set of tensions or problems that will have to be solved to take our mythical marriage beyond the honeymoon. Let me repeat: These comments will not be exhaustive, but only illustrative, and I hope they will whet some appetites.

II.

First of all, then, I will illustrate a few areas of clear potential interplay between architecture and psychology. One area emphasizes the *involvement* of the person with his environment, rather than a simple reaction or response.² In this connection, much of Frank Lloyd Wright's success as an architect was due to his intuition of the many and subtle ways in which people interact with space and objects in space (Hall, 1966, p. 49). For example, the old Imperial Hotel in Tokyo provides the Westerner a constant reminder, in terms of vision, touch, and muscle sense, that he is in a different world. The changing levels, the circular, walled-in, intimate stairs, and the small scale are all new experiences. The long halls are brought to scale by keeping the walls within reach. Wright was apparently an artist in the use of texture, and he used the roughest bricks,

separated by smooth, gilded mortar, set in somewhat. Walking down the halls, the guest feels almost compelled to run his fingers along the grooves, but the bricks are so rough that to obey the impulse would be to risk mangling a finger. Wright somehow enhanced involvement with the environment by getting persons personally involved with the surfaces.

We make a serious mistake if we assume that only the usual five senses—sight, hearing, touch, smell, and taste—mediate between ourselves and our environment. Another sense, often called *kinesthetic sense*, is equally, if not more, important. Kinesthetic sense provides information about bodily movement and orientation, and involves sensors in the muscles, tendons, joints, and the labyrinth of the inner ear. For example, kinesthetic sense is crucial in orienting to the vertical and horizontal, and provides information over and above visual, auditory, and tactile cues.

The early designers of Japanese gardens apparently understood much about the interrelationship between kinesthetic experience of space and visual experience (Hall, 1966, pp. 49-50). Lacking wide-open spaces, and living close together as they did, they learned to make the most of small spaces. They were particularly ingenious at stretching visual space by exaggerating kinesthetic involvement. Not only are their gardens designed to be viewed by the eye, but far more than the usual number of muscular sensations are built into the experience of walking through a Japanese garden. The visitor is periodically forced to watch his step as he picks his way along irregularly spaced stepstones across a pool. At each rock, he must pause and look down to see where to step next, and these movements all involve kinesthetic cues. Even the neck muscles are deliberately brought into play. Looking up, the visitor is arrested for a moment by a view that is broken as soon as he must move his foot again to take a new perch. The involvement of all these

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²Much of this section is adapted from Hall (1966), and makes use of his highly illuminating examples.

senses generates an experience of "much more" per cubic foot than most Westerners are accustomed to.

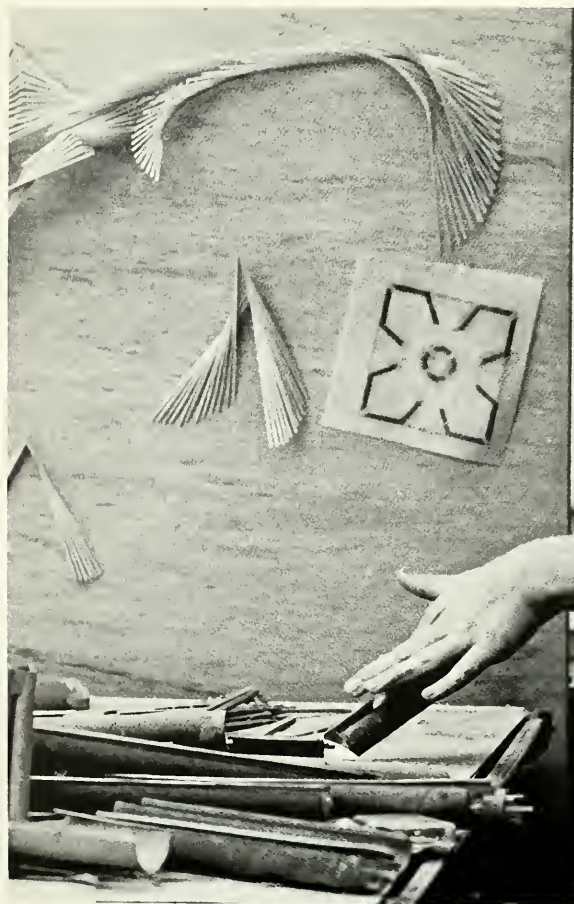
Both the Japanese and European concepts of spatial experience vary from our own, which is severely limited. For example, in America, the conventional idea of the space needed by office employees is restricted to the actual space required to do the job (pp. 50-51). Anything beyond the minimum requirement is regarded as frill. The notion that there may be additional requirements is resisted, perhaps partly because Americans distrust subjective feelings as data that help in assessing an environment. We can measure with a tape whether a man can reach something, but subjective feelings tell us something else about a working space. For example, most office workers intermittently push away from their desks, lean back, and stretch their arms and legs, and the length of this away-from-desk shove is very uniform for individuals. In spite of all the other criteria of efficiency, office spaces are *felt to be inadequate* if the worker touches or bumps into something during the away-from-desk shove.

The second area of rather direct potential cross-seeding focuses more specifically on the visual sense and the mechanism of seeing. Let me engage in a quick review of some of the properties of the visual mechanism—the kinds of things you probably all know already (pp. 66-67). The retina, the light-sensitive part of the eye, is composed of at least three parts or areas: the fovea, the macula, and the region where peripheral vision occurs, or what is involved in what we call "seeing out of the corner of your eye." The three areas perform different, but interdependent, visual functions. The fovea, a small circular pit in the center of the retina containing roughly 25,000 closely packed color-sensitive cones, each with its own nerve fiber, is especially useful in, and makes possible, extremely fine visual detail, like threading a needle or removing a splinter. Surrounding the fovea is the macula, an oval body of color-

sensitive cells not so closely packed as those in the foveal area. Macular vision is clear, but not nearly as sharp as foveal vision, and is particularly important in such activities as reading. Finally, when you detect movement out of the corner of your eye while looking straight ahead, you are seeing peripherally. Correspondingly, moving out the foveal and macular areas of the retina, the character and quality of vision changes quite radically. Vision becomes more coarse, but the perception of motion is enhanced, partly because the cells are more widely spaced, and partly because larger bundles of cells are connected to a single nerve fiber. This reduction of detailed vision and enhancement of the perception of motion in peripheral vision have implications for the impact of the environment (p. 68). In what is seen peripherally while looking straight ahead, movement, straight edges, and alternating dark and light colors are particularly noticeable, or even exaggerated. This means, for example, that the closer *in* the walls of a tunnel or hallway are, the more apparent and exaggerated your own sense of movement down the hall will be. Furthermore, objects, paintings, trees, or pillars, especially if they include color variations, will enhance the sense of movement. It is this feature of peripheral vision that apparently leads drivers to slow down when they enter a tree-lined road from an open highway, even when the road surfaces are similar. Conversely, to *increase* the speed of motorists through tunnels, it is necessary to reduce the number of visual impacts in the peripheral areas. In hallways and other pedestrian trafficways, reducing the amount of peripheral stimulation should increase the speed of traffic.

I have mentioned only a few design implications of the visual system, and I have mentioned them only for illustrative purposes. Without minimizing the importance of the other senses, I think we may say with some confidence that man's relationship to his architectural environment is overwhelmingly dominated by *what he sees*, and that the dreams that

"We can measure with a tape whether a man can reach something, but subjective feelings tell us something else about a working space."





take shape on the architects drawing table are dreams of visual imagery—not designs of odors and sounds (Parr, 1964-1965). You plan for the eye and present your plans in visual pictures and models. Therefore, design based on knowledge of the visual system is of critical importance. Simply to reinforce the importance of considering visual experience in design, I would point out that psychologists have found that varied visual experience seems to be as important in developing some physical skills as actual practice on the skills themselves. This seems to be true in acquiring the skill of walking (Hunt, 1964), and should certainly be true of other skills.

The third area of possible cross-seeding between architecture and behavior is somewhat different (Hall, 1966, pp. 21-29). If you had driven along a country road outside Rockville, Maryland, during the late 1950s, you would hardly have noticed an ordinary old stone barn set back somewhat from the road. Inside, the barn was far from ordinary, and what happened there and what happened later in a number of laboratories, was rather extraordinary. In this barn, John B. Calhoun, an ethologist, set up controlled conditions to study the behavior of white Norway rats. Throughout his work, Calhoun carefully provided for all the usual nutritional needs of his subjects, but at the same time, he carefully observed what happened when he systematically increased the crowding of the rats. With increased crowding, even when there were plenty of the nutrients and water for all the rats, some startling things happened that throw new light on the social behavior that accompanies crowding.

Under conditions of overcrowding, a situation emerged that Calhoun called the “behavioral sink,” a term chosen to figuratively summarize the gross distortions and pathologies that developed—the behavioral sink was a kind of social behavioral cess pool (Calhoun, 1966). The results included severe disruptions

of nest-building, mothering, courting, sexual behavior, reproduction, and social organization, and autopsied rats showed serious physiological effects.

Maternal behavior broke down. Normally, females work hard to keep litters sorted out, and when nests are uncovered, mothers work hard to relocate and protect the infants. In the overcrowded sink conditions, mothers failed to keep litters separate, the young were often trampled and eaten by hyperactive males who invaded the nests, and mothers would fail to relocate and protect uncovered infants, who were left to die. Homosexuality became rampant and even dominant. Many rats withdrew so markedly that they appeared not to notice their associates at all. With enough water available for all, often when one rat would go to drink, hordes of others would crowd in so that none got a drink. Infant mortality went up. Pregnant rats had trouble carrying to full term. Not only did the miscarriage rate go up drastically, but females started dying of disorders of the uterus, ovaries, and fallopian tubes. Diseases of the kidneys, livers, and adrenals also increased. Savage aggression increased.

Another way to summarize Calhoun's results is to use a slightly more figurative language (from Parr, 1965, pp. 83-84). As crowding increased, Calhoun noticed the appearance of several groups of deviant individuals with patterns of behavior not normally present in the rat community. Homosexuals and pansexuals, who would try to copulate with anything in sight, made their appearance. Another group, the peeping toms, sought locations where they could stare in upon females in the brood areas, and would flee if a dominant male caught them, only to return later. When opportunities presented themselves to attack unprotected females, they dispensed completely with the courtship rituals observed by normal males, and would not tolerate a delay. There appeared another type of animal that Calhoun called somnambulists, and which others have called

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zombies. The zombies took no interest in either sex, but they loved to eat; they were the fattest rats, and had the sleekest fur. Of more immediate interest, however, is that even dominant males who retained the most normal behavior, also exhibited occasional signs of going berserk, attacking females, eating infants, and so on.

However, the important point for us here today is that environmental design can help to ameliorate the effects of crowding. I am not referring to architectural design for population control, which is just a little beyond our grasp. I am talking about design to alleviate the pathological *side-effects* of crowding. It may be, for example, that the typical human requirements for space may be altered or reduced with appropriate design. I submit that *privacy* of the old-fashioned type will make crowding pressures more tolerable and less exasperating. I am delighted to leave the actual planning and designing of this privacy program to you. I would predict, though, with Parr (1965, p. 85), that a society that is able to maintain privacy in the midst of congestion will be noted for its capacity to remain calm under stress. For example, have you ever seen a person less perturbable than a "very British" Englishman? Well, cross cultural research suggests that English dwelling units can much more often be characterized by fences, gates, unobtrusive yards, and thick walls that very reluctantly transmit sound than can American dwelling units.³

The interesting thing about rats is that they act so human. The relatively phlegmatic way of life in rural solitude is accepted as a fact of human experience everywhere. In fact, it is a trait that is featured in stories and jokes. By reverse implication, this also ascribes a more choleric temper to the crowded multitudes of the urban centers. Man seems to follow the example of rats in this, as in so many other things having to do with behavior (Parr, 1965, p. 84).

³Research by Roger G. Barker, of the University of Kansas.

The last area of illustrative, possible cross-seeding is one that I will only mention briefly. For background to this area, imagine with me a spectrum or continuum of what I would call *sensory loading*. That is, imagine that the amount of environmental stimulation from the several senses being received by a person varies from very much down to none, or very little. A tremendous body of research has been carried out to ascertain the effects of various amounts of stimulation upon the individual. For some years, after the research of Woodburn Heron and others, it was clear that under conditions of extreme isolation and low stimulation, or a completely homogeneous environment, persons became markedly irritable, their responses became more childish, nervous tension increased, thinking was markedly impaired, and sometimes psychotic symptoms appeared. However, we now find that *both ends* of the spectrum are equally destructive—sensory underloading and sensory overloading are destructive to balanced judgments and even to rationality itself (Fitch, 1965, pp. 707-708). In other words, some kind of middling range of environmental variation and stimulation is not only the spice of life; it is the very *stuff* of life (p. 707). Furthermore, there are strong recent hints that intelligence in the developing child is influenced as much, if not more, by optimal stimulation as by genetic factors. Which characterizes our cities and our environmental designs to the point of stress: monotony and understimulation or complexity and overstimulation? (Kates and Wohlwill, 1966, p. 16). I believe there are powerful design implications here, and again, I leave them to you.

III.

These few examples, although they only scratch the surface, illustrate a sound basis for a marriage beyond a starry eyed honeymoon. However, there are also some very knotty problems that must be worked out before the marriage can work. I have time to mention only

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several issues today, and again, they must serve to illustrate rather than to exhaust the list.

One of the problems we must work out is what we mean by that curious little password and status symbol, *research*. Everyone talks about the *research* he is doing. But, what is *research*? In the fall of 1965, I spent a few wild and delightful hours in juries and discussions with some of you. One afternoon, while discussing the design of office buildings, an architect wrote the following proposition on the board: "Environmental flexibility leads to enhanced feelings of self worth," and he jarred me out of my reverie by asking me, "Is that true?" During my stunned and ignorant silence, the architect added, "We have Dr. Willems here to help us do *research* on these things." I saw a lot of brainstorming going on, and a lot of guessing, but no *research* as I was accustomed to using the word. Later in that school year, I was having the grand tour of Caudill, Rowlett, and Scott, and I heard the word, *research*, used at least twice, once by my host when he described as *research* the activity going on in a projection room where several men were viewing slides of models of buildings for the big fair coming up in San Antonio, and once by my host when he talked about some of the reactions to the education building at Harvard and he said he had been doing a little *research*, which involved taking photographs of the building from various angles and perspectives.

As I understand it, one very important aspect of the business we are all about is to answer questions about human nature, human dispositions, human values and motives, and human behavior, as these relate to the environment. Psychologists typically have a particular set of activities and strategies in which they engage to answer such questions, a set of activities and strategies they call *research*, and, for them, *research* usually involves designing and setting up experiments in a laboratory or the natural setting that will feed back to them clear,

reliable data and information. One of the very real tensions or problems in the relation between architecture and psychology is the patience required by architects when they confront this plodding, capricious breed of students of human nature called psychologists. Psychologists often insist upon worrying about research problems that have not the slightest direct or apparent relevance to what you need to do.

Any experienced traveler knows that there are cities, parts of cities, or buildings in which we can walk or work for hours or miles before feeling any fatigue, while the prospect of other architectural arrangements makes him tired even before he enters them (from Parr, 1964-1965). What are the connections between architectural arrangements and this wasteful psychosomatic drainage on a person's energy that seems to bear no relation to the actual amount of physical exertion required? There are places that invite relaxation, spectatorship, meditation, lightheartedness, and exhilaration, while others invite fretting, tension, sadness, and brooding. What are the principles that govern these relationships between milieu and mood? These questions of how things are connected, and what governs them, should be dear to the hearts of some psychologists, but we will have to allow psychologists to move into them gradually, and in terms of what they call *research*. Finally, and perhaps just as important, *research* as the psychologist knows it usually cannot be hurried. It takes time, and it is impossible to anticipate just when the process will yield useful information. What I am pleading for here is patience. Psychology has just discovered architecture, and vice versa. We need to come to intimate acquaintance with each others' terminology and ways of looking at problems.

"But," you might well protest, "We can't wait. We need hard facts and information now." This comment, so often heard and felt, brings me to the second unresolved problem in the relationship. The problem has to do with

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what we are looking for. A psychological want of a person does not need to be consciously felt or verbally articulated to have importance or reality. At the same time, neither is the strongest or most loudly expressed desire necessarily proof that something of genuine importance is lacking. What kinds of information do architects want to have to help them with their design problems? I believe we need to look in all kinds of directions for evidence concerning the demands actually placed upon our minds and bodies by the environment. And, since it would not be permissible to use humans for experiments that might have permanently detrimental effects, much of our evidence will have to come from the animal kingdom, as in the research by Calhoun (from Parr, 1965, p. 73). What I am trying to say here is that as yet neither architects nor psychologists know where the best paths of mutual research interest lie, and we should be careful to avoid blaming each other for this state of affairs.

A third problem is related to the complexity of the human response to what the architect is trying to do. I take it that all architects try to give their clients beautiful buildings. The problem is that "beauty" is not a discrete property of the building, but rather describes the client's or occupant's response to the impact of the building (Fitch, 1965, p. 709). This response is extremely complex, and it is complex partly because much more than purely sensory experience goes into it. For example, we can easily imagine two persons, one of whom thinks an old house to be beautifully and warmly elegant, and the other of whom thinks it is ugly, perhaps because she knows that the former occupant was murdered there. Most of our esthetic judgments and responses are substantially influenced by non-sensory factors such as these, a fact that can be affirmed and reaffirmed from daily life. It is our faith in antiseptic measures that makes the white uniforms of nurses and spotless sheets of hospitals reassuring to us. It

is our knowledge of their different costs that exaggerate the visual differences between diamonds and crystal. It is our knowledge of Hitler's Germany that has converted the swastika from the good luck sign of American Indians to a hated symbol (from Fitch, 1965, p. 708). Another way of saying all this is that one of the important problems confronting architecture and psychology lies in the fact that the physical features of man's environment affect action by virtue of the way these features are interpreted and defined by the person. The important responses to the environment are seldom direct and automatic, but depend upon cultural, social, and personal definitions (Warriner and Good, 1966, p. 5). And, the guidelines for finding our way out of this apparent morass will be very important in the developing relationship between architecture and psychology.

Apart from the problem of personal meanings attached to features of the environment, another subtle issue confronts us. It is seductively easy to think that all we need to do to understand architecture and behavior is to identify different architectural arrangements and then conduct surveys, interviews, and questionnaires to unfold to ourselves the truth of architectural effects upon behavior. However, many powerful relations between the environment and behavior never enter the person's consciousness, or awareness, at all. For example, in two studies (Maslow and Mintz, 1956; Mintz, 1956), the investigators had their research assistant test people in three different types of rooms: a modern, attractive office; an office of average to mediocre appearance; and a room resembling a janitor's storeroom that was in poor repair. Examiners in the ugly room finished testing more quickly than examiners in attractive rooms. And yet, the examiners themselves could not articulate any relation between type of room and length of examination. My point here is that we must think rather carefully of ways to observe and measure the effects that we are interested in. In other words, before we

can give you the hard facts you need, there are some hoary *research* problems to be worked out.

A final, but important, problem has to do with the psychology that will contribute to a lasting marriage. I can't speak on how architecture should adapt to make the relationship work, but I can at least speculate on the shape of a psychology that would contribute rather directly. Psychology is a latecomer to architectural interests, and as a latecomer, I have noticed something that will not come as a shock to you. Although the disciplines of architecture and environmental design are the storehouses of ideas, grand schemes, and thought about the forms and transformations of the everyday surroundings of people, architects have much less than total influence upon the *actual* form of our environments—indeed, perhaps much less influence than they believe or hope they have. In other words, from the standpoint of architects and designers, much of our environment is haphazard. I am leading up to saying that what we need is a psychology that Kenneth Craik has called *environmental psychology* (in press), which studies the relations of behavior to the haphazard as well as the architecturally-designed environment. Following Craik, I submit that to understand human behavior in relation to the non-human environment, we must ask at least three different questions: (a) How people *comprehend* the environment, (b) How they *shape* the environment, and (c) How they are *shaped by* or *influenced by* the environment.

The first question, how people comprehend the environment, deals with emotional and perceptual responses. Our language and literature are full of expressions that attest to the importance of such responses. We speak of threatening mountains, blissful valleys, depressing city canyons, cheerful gardens, and so on (Parr, 1965, p. 78), and such experiences are very important to people. Environmental psychology will need to concern itself with such experiences.

There are many points of departure for the second question, how people shape the environment. Just one example might be to study the *participants* in the process of environmental transformation (Craik, in press). For example, in seeking to understand the particular form and function of a new office building, it might be important to know something about the judgments, beliefs, intentions, attitudes, values, interests, and skills of at least the following persons: the management committee, local residents who supported or condemned the zoning changes, the wife of a vice-president who liked one architectural firm better than another, the designers who judged the harmony of the plan with the city's master plan, the urban designers who originally formulated the master plan, the architectural draftsman, the building committee, the building code commission, legislators, and contractors, to name only a few. After all, it is out of such collective behavioral efforts that transformations of the everyday environment are made.

The third question, how persons are shaped by the environment, is the one we usually think about in the relations between architecture and psychology, and for that reason, does not need much elaboration here. Examples would be studies of the effects of walls of various colors upon typists' performances; effects of room design upon seating arrangements and social interaction; and effects of windowless classrooms upon learning or student-teacher relations. These are only examples, of course, but they serve to illustrate why architectural or environmental psychology must take a place of high priority and importance right along with research on other standard techniques for modifying behavior, such as hypnosis, psychotherapy, drugs, persuasion, and brainwashing (Craik, in press).

What will be the relevant products for architecture coming from such an environmental psychology? Hopefully, there will emerge a



fund of information that will contribute directly to the architectural process.

IV.

So much for argument and speculation. I have tried to suggest that the honeymoon is over, but that despite a number of issues that remain to be worked out, there seems to be enough of a sound base to make the newly-formed marriage between architecture and psychology work. Whether it will last, I cannot say. I can only say that I hope it will, and that both parties will mature by it and gain from it.

In closing, let me quote a short passage from A. E. Parr, whose writings have provided so many of the ideas for this paper already:

"... psychologists can not design our surroundings. That is not the field in which their talents and training lie. Nor do they, as yet, have very much to contribute of concrete and applicable information concerning specifically human demands upon the structural configuration of space. But, with a little incentive and more support, a usable body of knowledge could be rapidly developed, so that factual psychological information can begin to replace fatuous esthetic doctrine as a tool of the designer's art" (1965, p. 85).

I hope Parr is right. But, to make him right, someone will have to make these problems and interests his own. This is the master problem of architectural psychology that I mentioned earlier: Someone must take the initiative necessary to mobilize the arena of cooperative and interdependent activity that we might call architectural psychology. To realize these hopes, some entire professional careers will have to be devoted to the mobilization. It will take more than part-time interest, and it certainly will require much more than pure talk about how delightful the prospects are.

REFERENCES

- Calhoun, J. B. The role of space in animal sociology. *Journal of Social Issues*, 1966, 22, No. 4, 46-58.
- Craik, K. H. The prospects for an environmental psychology. *Journal of Environmental Design* in press.
- Fitch, J. M. The aesthetics of function. *Annals of the New York Academy of Sciences*, 1965, 128, 706-714.
- Hall, E. T. *The hidden dimension*. New York: Doubleday, 1966.
- Hunt, J. McV. The psychological basis for using pre-school enrichment as an antidote for cultural deprivation. *Merrill-Palmer Quarterly*, 1964, 10, 209-248.
- Kates, R. W., & Wohlwill, J. F. Man's response to the physical environment. *Journal of Social Issues*, 1966, 22, No. 4, 15-20.
- Maslow, A. H., & Mintz, N. L. Effects of aesthetic surroundings. *Journal of Psychology*, 1956, 41, 247-254.
- Mintz, N. L. Effects of aesthetic surroundings. *Journal of Psychology*, 1956, 41, 459-466.
- Parr, A. E. Environmental design and psychology. *Landscape*, 1964-1965, 14 (Winter).
- Parr, A. E. City and psyche. *The Yale Review*, 1965, 55, 71-85.
- Warriner, C. K., & Good, L. R. The relation of environmental factors to human action and human character: a research basis for public housing policy. Unpublished manuscript, University of Kansas, 1966.

"There are places that invite relaxation, spectatorship, meditation, lightheartedness, and exhilaration, while others invite fretting, tension, sadness, and brooding."

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